

The Egg of Columbus

JAMF Nation User Conference
Guthrie Theatre, Minneapolis, 15.10.2013



The

JAMF Na
Guthrie Theat



user conference

© Marko Jung, University of Oxford

The Egg of Columbus

Solutions from Mac Team at the University of Oxford



Marko Jung

Team Leader Mac Engineering marko.jung@it.ox.ac.uk @mjung



Acknowledgements

Aaron Wilson

Adrian Parks

Alan Williamson

Christopher Beard

Guido Klingbeil

James Partridge

Jon Hutchings

Lance Oliver

Marcus Saunders

Peter Miklitz

Robin Miller



Marko Jung

Team Leader Mac Engineering marko.jung@it.ox.ac.uk @mjung



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Oxford at a glance



Oxford at a glance





UNIVERSITY OF
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Oxford at a glance



Whole life cycle management



Deployment

Challenge: OS X Release Cycle

10.8.5	12F37
10.8.4	12E55 12E3067
10.8.3	12D78
10.8.2	12C54 12C2034, 12C2037, 12C2304, 12C3103
10.8.1	12B19 12B2100, 12B2517
10.8	12A269



Source: <http://support.apple.com/kb/HT1633> and <http://support.apple.com/kb/HT1159>

Imaging Techniques



Thick Image



Hybrid Image



Thin Image

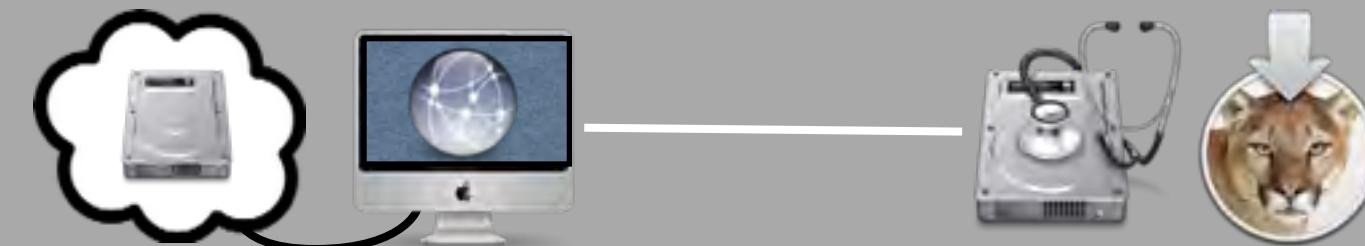
Source: [http://technet.microsoft.com/en-us/library/ee956904\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ee956904(WS.10).aspx)

Deployment Strategy

1. Registration



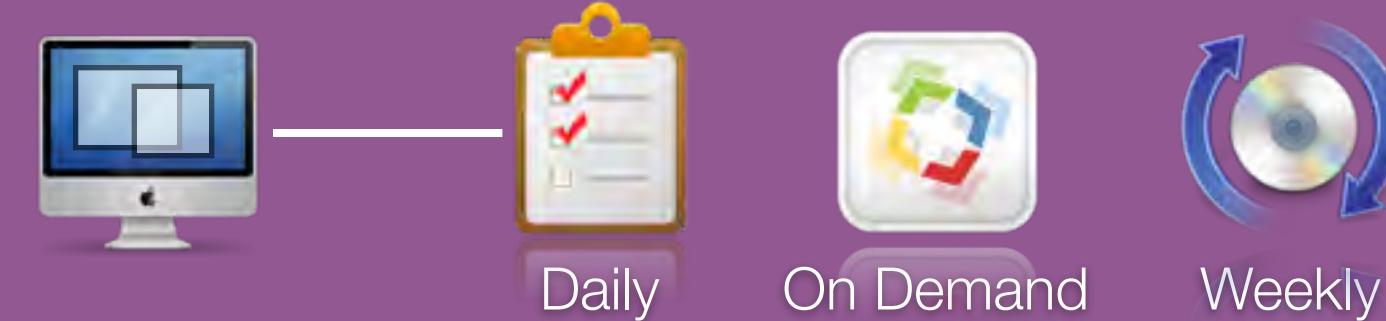
2. NetBoot



3. First Local Boot



4. Daily Use



Result



Partitioning



OS X



Updates



Directory
Binding



Config



Branding



Apps

Result



Partitioning



OS X



Updates



Directory
Binding



Config



Branding



Apps

Partitioning Strategy



Macintosh HD



Recovery HD
(Hidden)



LocalStorage

Thin Imaging Recipe

Script: buildPreinstall10.8sh

Lock screen and bring Casper Imaging to front

Partitioning: partitionDisk2.pl

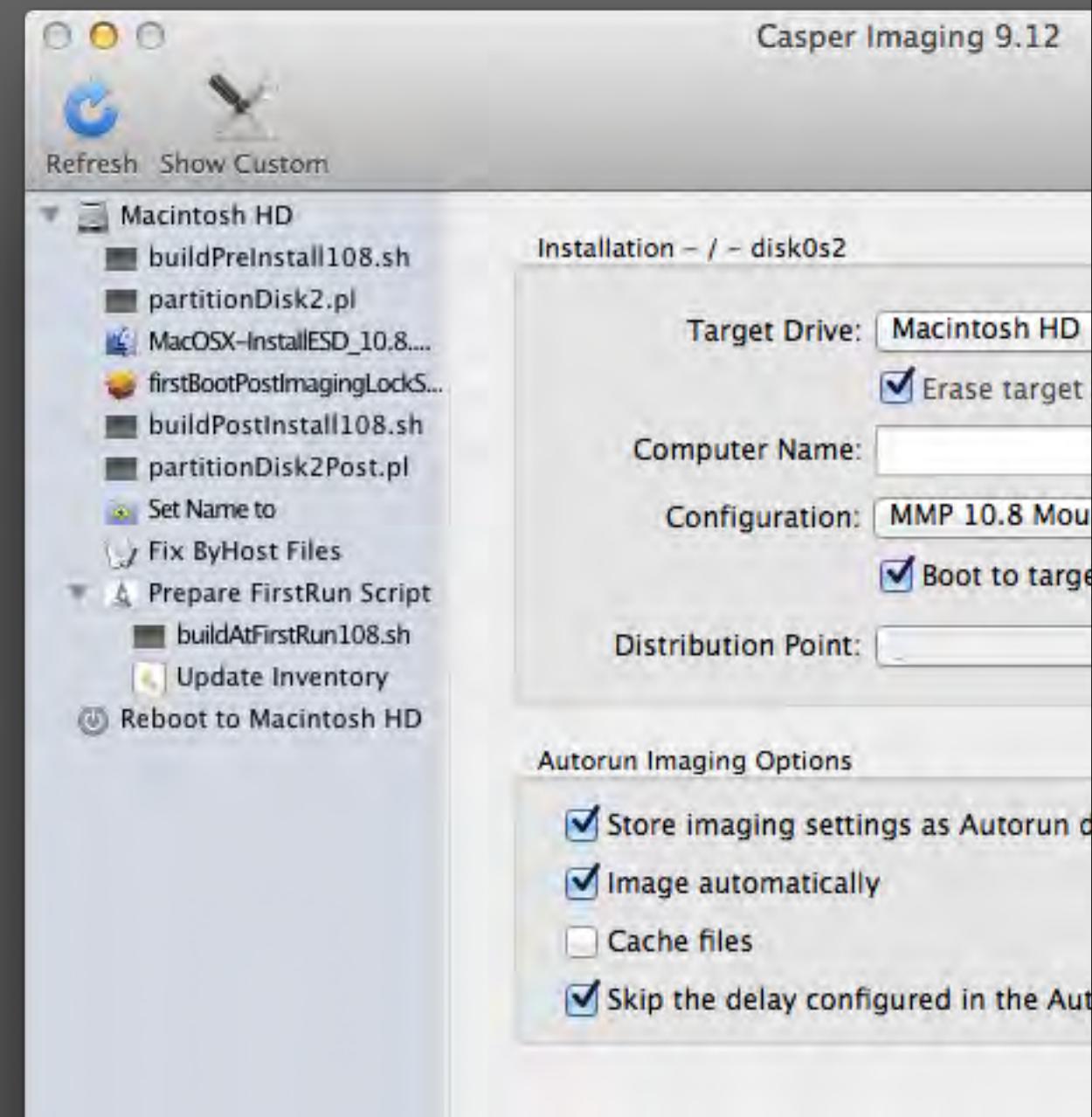
Main partitioning logic

OS X Installer + Branding

Script: buildPostinstall10.8.sh

Partitioning: partitionDisk2.pl

Post-partitioning clean up



Partitioning Recipe



Autorun
Data



Macintosh HD

Partitioning Recipe



Partitioning Recipe



Partitioning Recipe



Script Source: <https://github.com/ox-it/mac-scripts/tree/master/partitioning>

Status update



Partitioning



OS X



Updates



Directory
Binding



Config



Branding



Apps

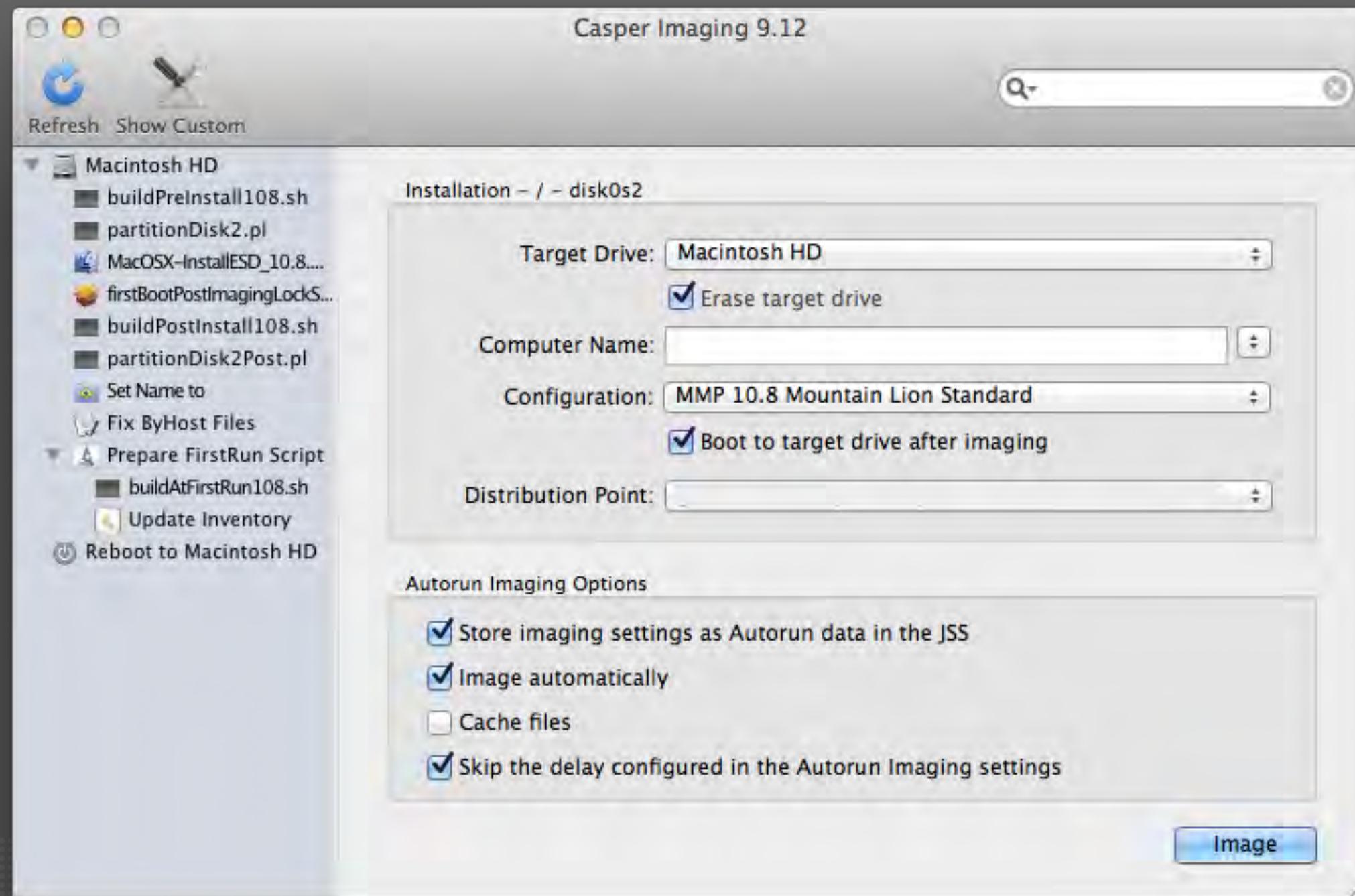
First Run

First Run Strategy

3. First Local Boot



FirstRun recipe



```
1#!/bin/bash
2# (c) 2013 University oxfordf Oxford IT Services
3#      source https://github.com/ox-it/mac-scripts
4# Script to be run by a LaunchAgent with attribute
5# LimitLoadToSessionType=LoginWindow
6FIRSTRUN_POSTINST_LAUNCHDAEMON='/Library/LaunchDaemons/' \
7 com.jamfsoftware.firstrun.postinstall.plist'
8JAMFHELPER='/Library/Application Support/JAMF/bin/jamfHelper.app/' \
9 Contents/MacOS/jamfHelper'

10
11 if [[ -e "$FIRSTRUN_POSTINST_LAUNCHDAEMON" ]]; then
12   logger "$0 running. First run post imaging detected."
13   # lock screen with fullscreen jamfHelper window as background task
14   "$JAMFHELPER" -windowType fs \
15     -description 'Installation is in progress. Please wait...' \
16     -icon '/System/Library/CoreServices/Installer.app/Contents/' \
17       Resources/Installer.icns' &
18
19 # begin watching the JAMF postinstall LaunchDaemon:
...
...
```



System installation in progress. Please wait...



```
1#!/bin/bash
2# (c) 2013 University oxford Oxford IT Services
3#      source https://github.com/ox-it/mac-scripts
4
5# Variables
6JAMF='/usr/sbin/jamf'
7DNSNAME=$(hostname -s)
8LOGFILE=/var/tmp/orchard-deployment-$(date +%Y%m%d-%H%M).log
9JSSCONTACTTIMEOUT=120
10JSSURL='https://jss.acme.com'
11ENROLLLAUNCHDAEMON='/Library/LaunchDaemons/ ↵
    com.jamfsoftware.firstrun.enroll.plist'
12
13# Tasks not requiring JSS connection
14if [[ ! $OSTYPE =~ darwin12.* ]]; then
15    echo "This script runs on Mac OS X 10.8.x only"
16    exit 1
17fi
```

Script Source: <https://github.com/ox-it/mac-scripts/blob/master/first-run/buildAtFirstRun108.sh>

```
18 # Check if portable or workstation:  
19 echo '--- form factor' >> $LOGFILE  
20 MODEL=$(system_profiler SPHardwareDataType | \  
21     grep 'Model Name:' | awk -F': ' '{print $2;}')  
22 [[ $MODEL =~ MacBook ]] && PORTABLE=1  
23 echo "Is portable: $PORTABLE" >> $LOGFILE  
24  
25 # Set computer name to match DNS name  
26 echo '--- computer name' >> $LOGFILE  
27 systemsetup -setcomputername ${DNSNAME} | tee -a ${LOGFILE}  
28  
29 # Set time zone, NTP use, and NTP server.  
30 echo '--- date and time' >> $LOGFILE  
31 systemsetup -setnetworktimeserver $TIMESERVER | tee -a ${LOGFILE}  
32 systemsetup -settimezone 'Europe/London' | tee -a ${LOGFILE}  
33 systemsetup -setusingnetworktime on | tee -a ${LOGFILE}
```

Script Source: <https://github.com/ox-it/mac-scripts/blob/master/first-run/buildAtFirstRun108.sh>

```
34 # if not a portable, turn Airport off:  
35 echo '--- airport power status' >> $LOGFILE  
36 if [ $PORTABLE -eq 1 ]; then  
37     echo 'Portable. Airport power status: on' >> $LOGFILE  
38 else  
39     AIRPORT=$(networksetup -listallhardwarereports | \  
40         grep -A 1 'Hardware Port: Wi-Fi' | grep 'Device:' | \  
41         awk '{ print $2 }')  
42     echo "Desktop. Turning AirPort ($AIRPORT) power off." >> $LOGFILE  
43     networksetup -setairportpower $AIRPORT off  
44     echo "Command exit code: $" >> $LOGFILE  
45 fi  
46  
47 # Enable SSH, as StartupScript.sh (which normally does this)  
48 # isn't created early enough  
49 echo '--- starting ssh daemon' >> $LOGFILE  
50 ${JAMF} startSSH  
51 echo "Command exit code: $" >> $LOGFILE  
52
```

Script Source: <https://github.com/ox-it/mac-scripts/blob/master/first-run/buildAtFirstRun108.sh>

```
53 # Enables ARD for the hidden casadmin account after reimagine
54 echo '--- ARD' >> $LOGFILE
55 /System/Library/CoreServices/RemoteManagement/ARDAgent.app/ ←
    Contents/Resources/kickstart \
56     -activate -configure -access -on -users BOFH \
57     -privs -all -restart -agent | tee -a ${LOGFILE}
58
59
60 # Create /Users/Shared if non-existent
61 echo '--- /Users/Shared' >> $LOGFILE
62 if [ ! -d /Users/Shared ]; then
63     mkdir -p /Users/Shared | tee -a ${LOGFILE}
64     chown root /Users/Shared | tee -a ${LOGFILE}
65     chgrp wheel /Users/Shared | tee -a ${LOGFILE}
66     chmod 1777 /Users/Shared | tee -a ${LOGFILE}
67 fi
```

Script Source: <https://github.com/ox-it/mac-scripts/blob/master/first-run/buildAtFirstRun108.sh>

```
68 # Test for JSS connection
69 echo '--- testing jss connection' >> $LOGFILE
70 loop_ctr=1
71 while ! curl --silent -o /dev/null --insecure ${JSSURL} ; do
72     sleep 1;
73     loop_ctr=$((loop_ctr+1))
74     if [ $((loop_ctr % 10)) -eq 0 ]; then
75         echo "${loop_ctr} attempts" >> $LOGFILE
76     fi
77
78     if [ ${loop_ctr} -eq ${JSSCONTACTTIMEOUT} ]; then
79         echo "I'm bored... giving up (${loop_ctr} attempts)" >> $LOGFILE
80         exit 1
81     fi
82 done
83 echo "Contacted JSS (${loop_ctr} attempts)" >>$LOGFILE ;
```

Script Source: <https://github.com/ox-it/mac-scripts/blob/master/first-run/buildAtFirstRun108.sh>

```
84 # Enroll 10.8 machines to allow certificate-based authentication
85 echo '--- enroll' >> $LOGFILE
86 ${JAMF} enroll | tee -a ${LOGFILE}
87
88 # Flush policy history
89 echo '--- flushPolicyHistory' >> $LOGFILE
90 ${JAMF} flushPolicyHistory | tee -a ${LOGFILE}
91
92 # Call some triggers
93 echo '--- JAMF triggers' >> $LOGFILE
94 ${JAMF} policy -action BuildPre | tee -a ${LOGFILE}
95 ${JAMF} policy -action SoftwareInstall | tee -a ${LOGFILE}
96 ${JAMF} recon | tee -a ${LOGFILE}
97 ${JAMF} policy -action SoftwareUpdate | tee -a ${LOGFILE}
98 ${JAMF} policy -action PrinterInstall | tee -a ${LOGFILE}
99 ${JAMF} policy -action BuildPost | tee -a ${LOGFILE}
100
101 # Done!
102 echo '--- Done!' >> $LOGFILE
```

Custom Triggers

Software

SoftwareInstall, SoftwareUpdate, SoftwareRemoval

System Build

BuildPre, BuildPost

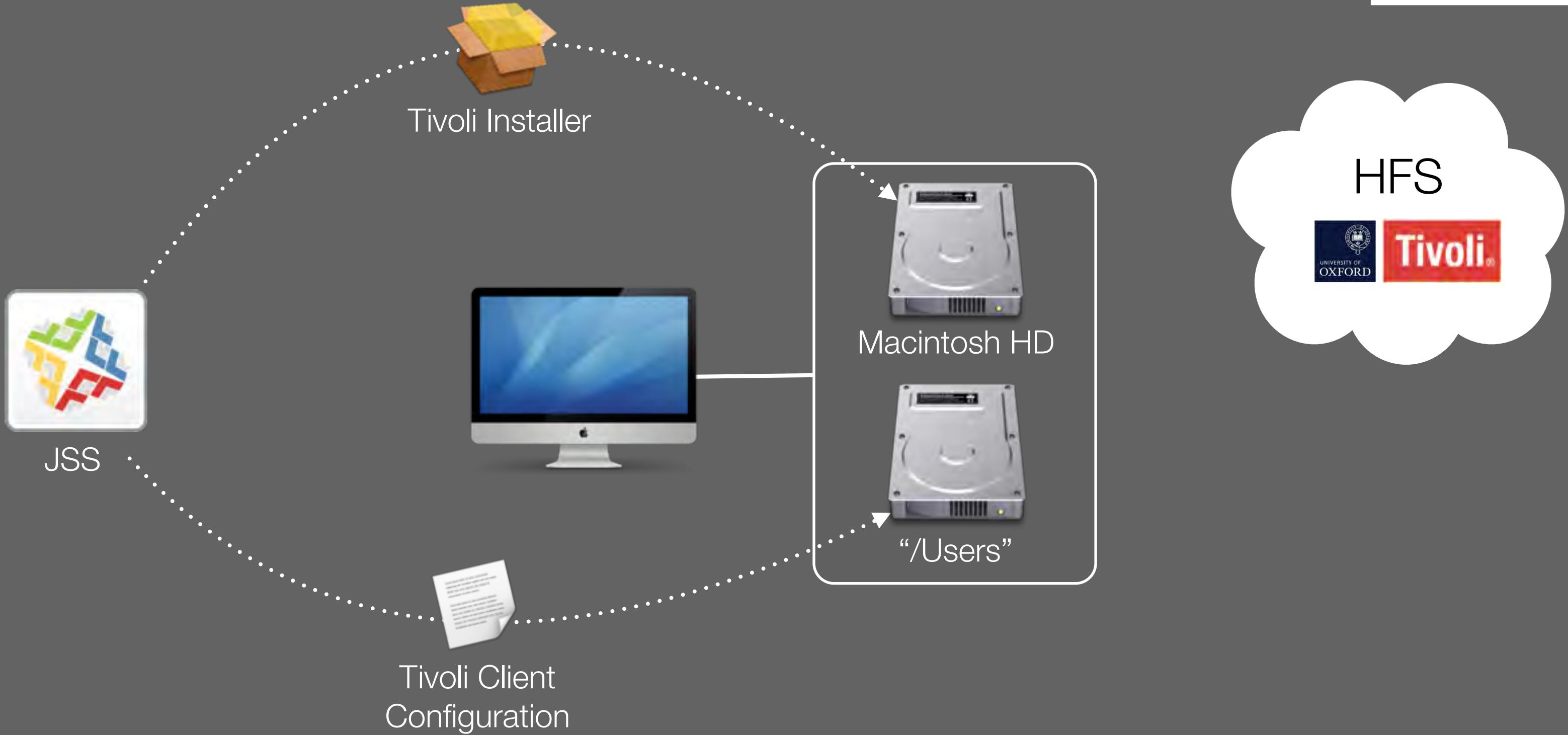
Enrollment

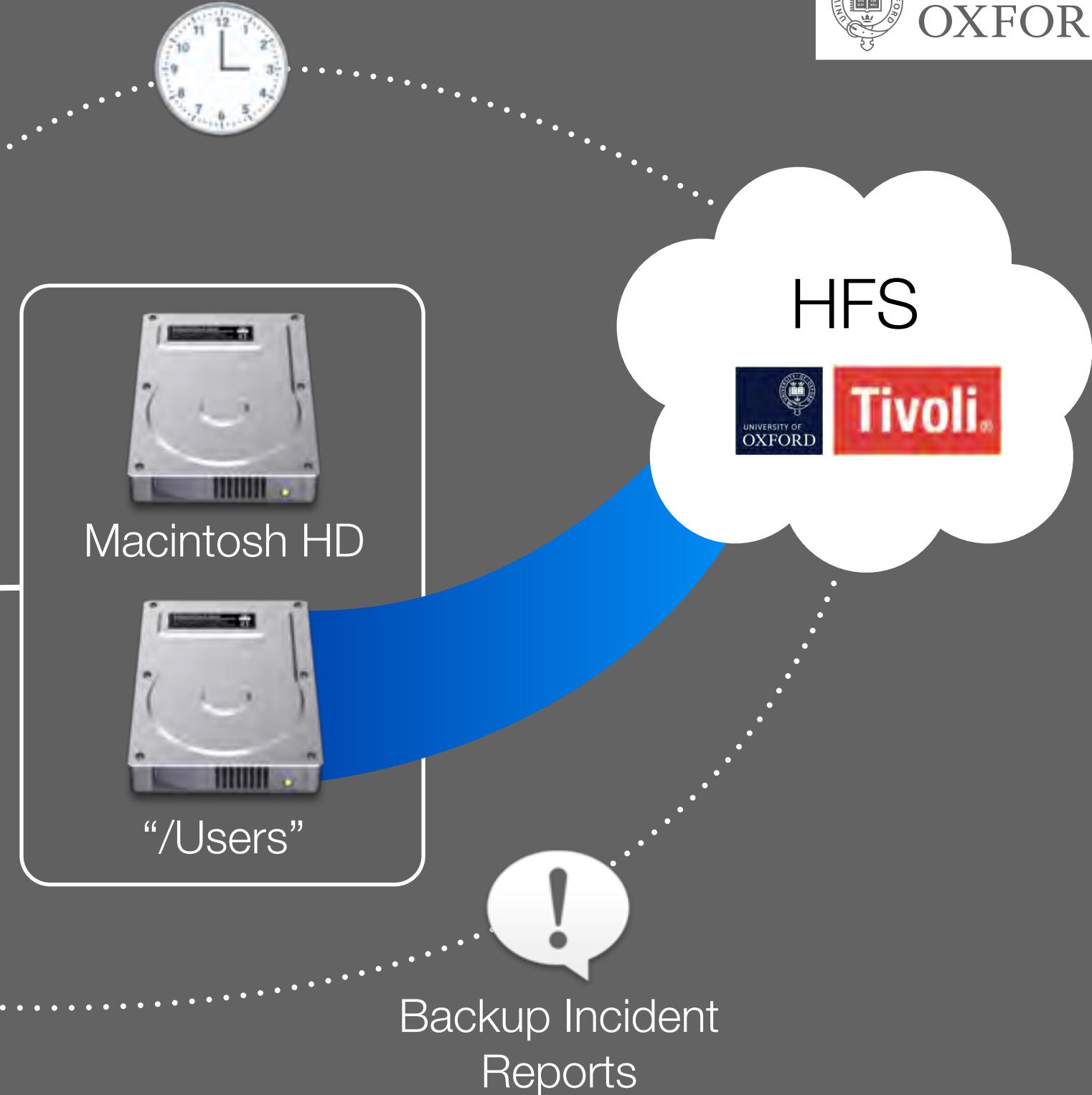
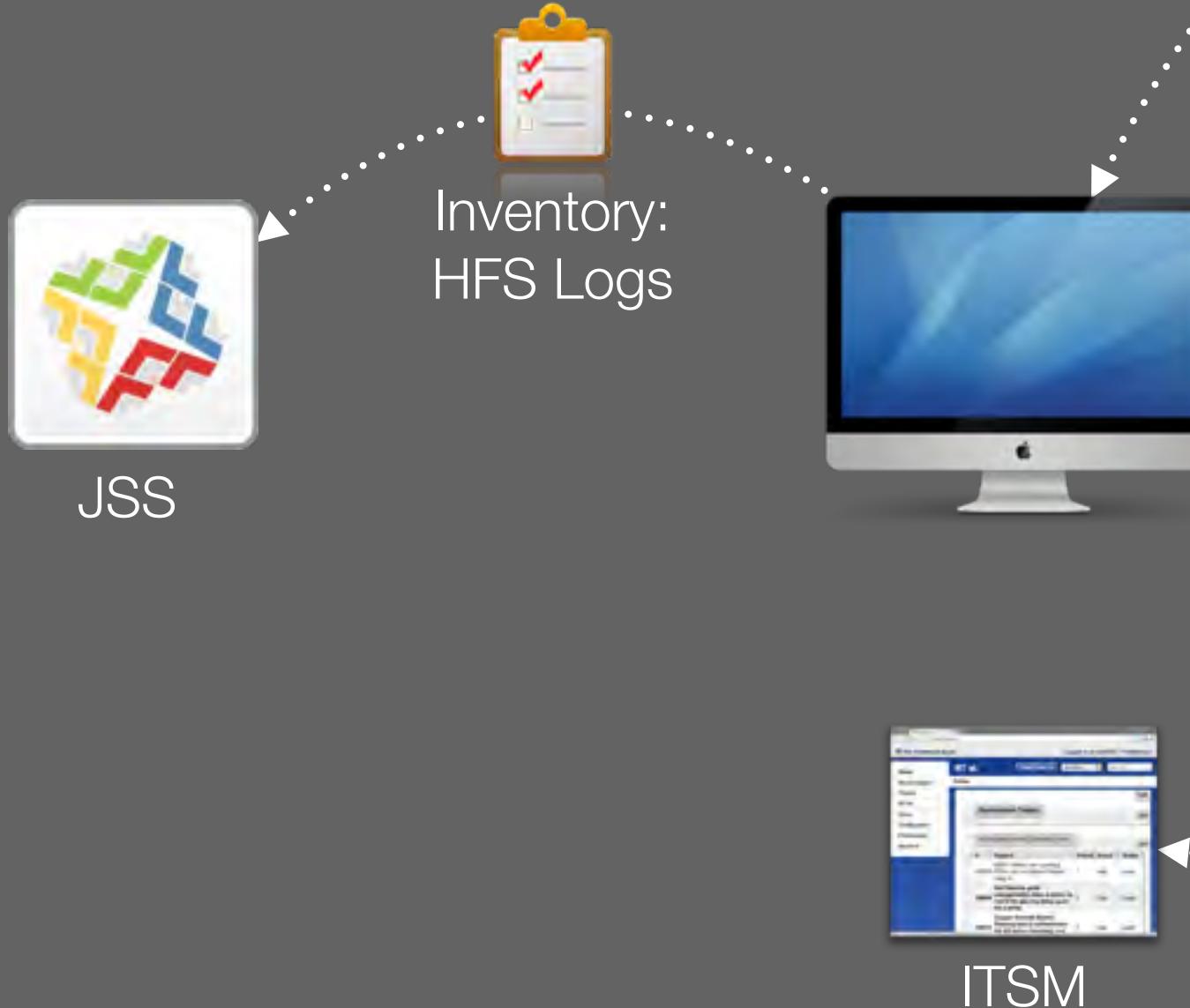
Weekly Maintenance

WeeklyMaintenancePre, WeeklyMaintenancePost

“Only wimps use tape backup”

Linus Torvalds





Backup Status info

HFS Info: Backup Last Succeeded	HFS Info: Backup Latest Status	HFS Info: Client Version	HFS Info: Scheduler Last Check In	HFS Info: Scheduler Status	HFS: Host Name
Successfully (09-09-2013 23:18:21)	Successfully (09-09-2013 23:18:21)	6.4.0.5	16-09-2013 09:34:01	OK - PID 69	mmp-achilles-bsg
Successfully (16-09-2013 23:48:36)	Successfully (16-09-2013 23:48:36)	6.4.0.5	17-09-2013 11:48:38	OK - PID 17582	mmp-bsgagamemnon-bsg
Successfully (16-09-2013 19:49:22)	Successfully (16-09-2013 19:49:22)	6.4.0.5	17-09-2013 07:49:24	OK - PID 2759	mmp-agrippa-bsg
Successfully (09-09-2013 18:45:58)	Successfully (09-09-2013 18:45:58)	6.4.0.5	16-09-2013 07:21:18	OK - PID 108	mmp-bsgantonio-bsg
Successfully (16-09-2013 19:07:04)	Successfully (16-09-2013 19:07:04)	6.4.0.5	16-09-2013 19:07:04	OK - PID 90	mmp-bsgbalthazar-bsg
Successfully (16-09-2013 18:14:49)	Successfully (16-09-2013 18:14:49)	6.4.0.5	16-09-2013 18:14:51	OK - PID 69	mmp-bsgbanquo-bsg
Successfully (02-09-2013 21:53:02)	Successfully (02-09-2013 21:53:02)	6.4.0.5	16-09-2013 14:51:33	OK - PID 2864	mmp-bsgborachio-bsg
Successfully (16-09-2013 19:18:51)	Successfully (16-09-2013 19:18:51)	6.4.0.5	16-09-2013 19:18:51	OK - PID 107	mmp-bsgcaesar-bsg
Successfully (09-09-2013 22:14:40)	Successfully (09-09-2013 22:14:40)	6.4.0.5	16-09-2013 17:49:42	OK - PID 504	mmp-bsgcaliban-bsg
Successfully (09-09-2013 22:25:21)	Successfully (09-09-2013 22:25:21)	6.4.0.5	16-09-2013 10:25:27	OK - PID 71	mmp-bsgcalpurnia-bsg
Successfully (09-09-2013 22:35:21)	Successfully (09-09-2013 22:35:21)	6.4.0.5	16-09-2013 12:37:21	OK - PID 65	mmp-bsgcassandra-bsg
Successfully (09-09-2013 23:03:22)	Successfully (09-09-2013 23:03:22)	6.4.0.5	16-09-2013 12:03:29	OK - PID 7262	mmp-bsgcirinna-bsg
Successfully (16-09-2013 21:05:41)	Successfully (16-09-2013 21:05:41)	6.3.0.0	16-09-2013 21:05:42	OK - PID 66	mmp-claudio-bsg

Backup Status info

```
1#!/bin/bash
2# (c) 2013 University oxfordf Oxford IT Services
3#      source https://github.com/ox-it/mac-scripts
4
5function check_tsm_pid {
6    DSMPID=$( launchctl list | \
7        awk '/.*\tcom.ibm.tsm.dsmsched/ { \
8            if ( $1 == "-" ) print "not running"; \
9            else print $1; }' )
10   DSMSTATUS=$( expr "$DSMPID" : '[0-9]*' )
11 }
12
13 check_tsm_pid
```

Resources: <https://github.com/ox-it/mac-scripts/tivoli-storage-manager>

Backup Status info

```
14 # continued from previous slide
15 if [ $DSMSTATUS -gt 0 ]; then
16     RESULT="OK - PID ${DSMPID}"
17 else
18     launchctl unload /Library/LaunchDaemons/tsm.plist
19     launchctl load /Library/LaunchDaemons/tsm.plist
20     check_tsm_pid
21     if [ $DSMSTATUS -gt 0 ]; then
22         RESULT="OK - PID ${DSMPID} (restarted)"
23     else
24         RESULT="FAIL - failed restarting"
25     fi
26 fi
27 echo "<result>${RESULT}</result>"
```

Resources: <https://github.com/ox-it/mac-scripts/tivoli-storage-manager>

Nearly there...



Partitioning



OS X



Updates



Directory
Binding



Config



Branding



Apps

Applications

Mac App Store



MacBook Air

Mac App Store Product Usage Rules

Except as otherwise set forth herein,

- (i) If you are ***an individual acting in your personal capacity***, you may download and use an application from the Mac App Store (“Mac App Store Product”) ***for personal, non-commercial use on any Apple-branded products running Mac OS X*** (“Mac Computer”) that ***you own or control***.
- (ii) If you are a ***commercial enterprise or educational institution***, you may download a Mac App Store Product ***for use by either***
 - (a) a ***single individual on each of the Mac Computer(s)*** used by that individual that you own or control or
 - (b) ***multiple individuals on a single shared Mac Computer*** that you own or control. [...]

Source: <http://www.apple.com/legal/internet-services/itunes/us/terms.html>

Mac App Store

“Why can’t I download my personal Apps?”

Educate your users, Explain your end-users these rules and license terms

“Why can’t I open this file?”

Preinstall viewers for the most common data formats

Collect requests and define a threshold for deployment of new core software

“Why can’t I use tool foo it is way better than bar?”

One tool for each purpose agreed with user representatives

Have you considered ~/Applications?

Application Strategy



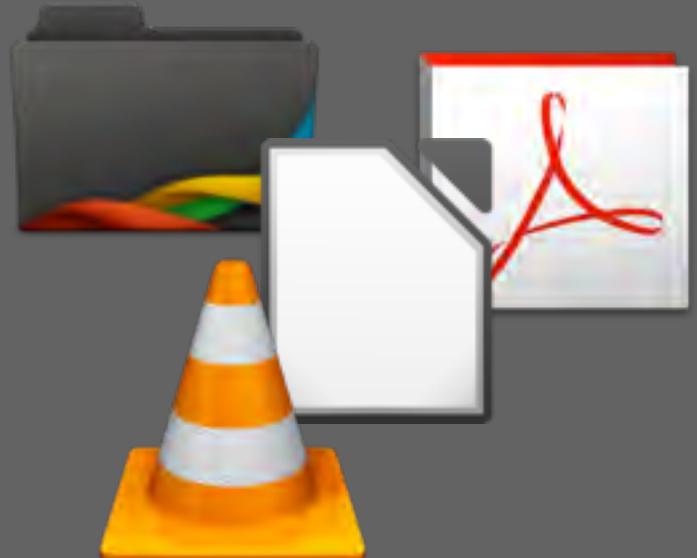
/Users/chip



/Users/chip/Applications



/Applications



Dealing with Updates

Define your update cycle

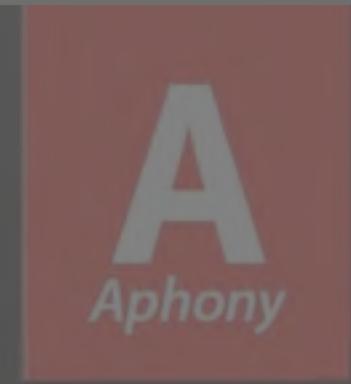
Facilitate auto-update features

Suppress update notifications

MCX, Configuration Profiles, Vendor specific (proprietary) settings file

Remind your suppliers about its importance

Enterprise readiness as part of every procurement decision



An update for

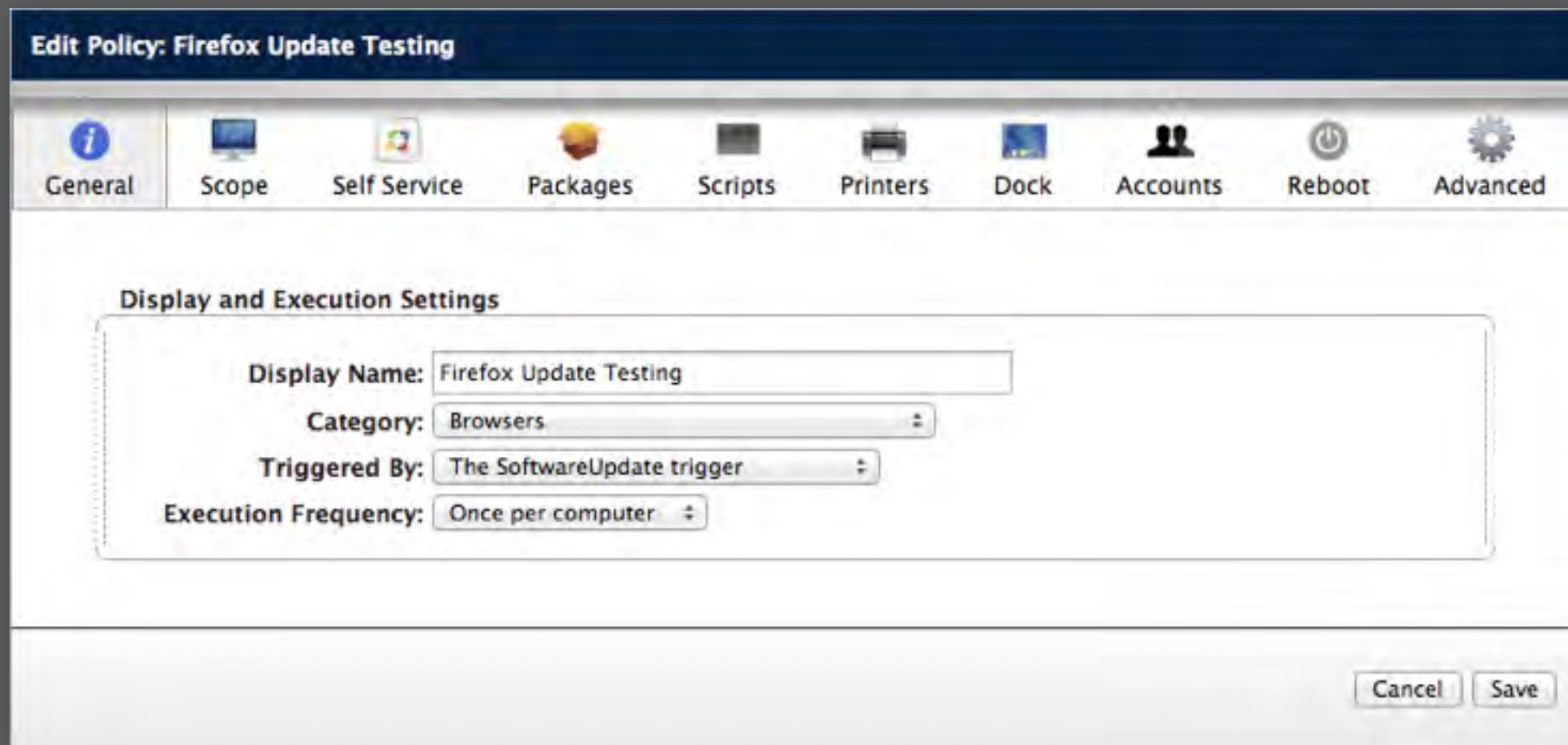
- Critical security
- Update popularity
- Now uses 35%
- Bug fixes and



Release Strategy



Update deployment



Update policies respond to the SoftwareUpdate action
and are also set to run once per computer.

Update deployment

Edit Policy: Firefox Update Testing

General Scope Self Service Packages Scripts Printers Dock Accounts Reboot Advanced

Assign this Policy to these Computers

Assign to All Computers

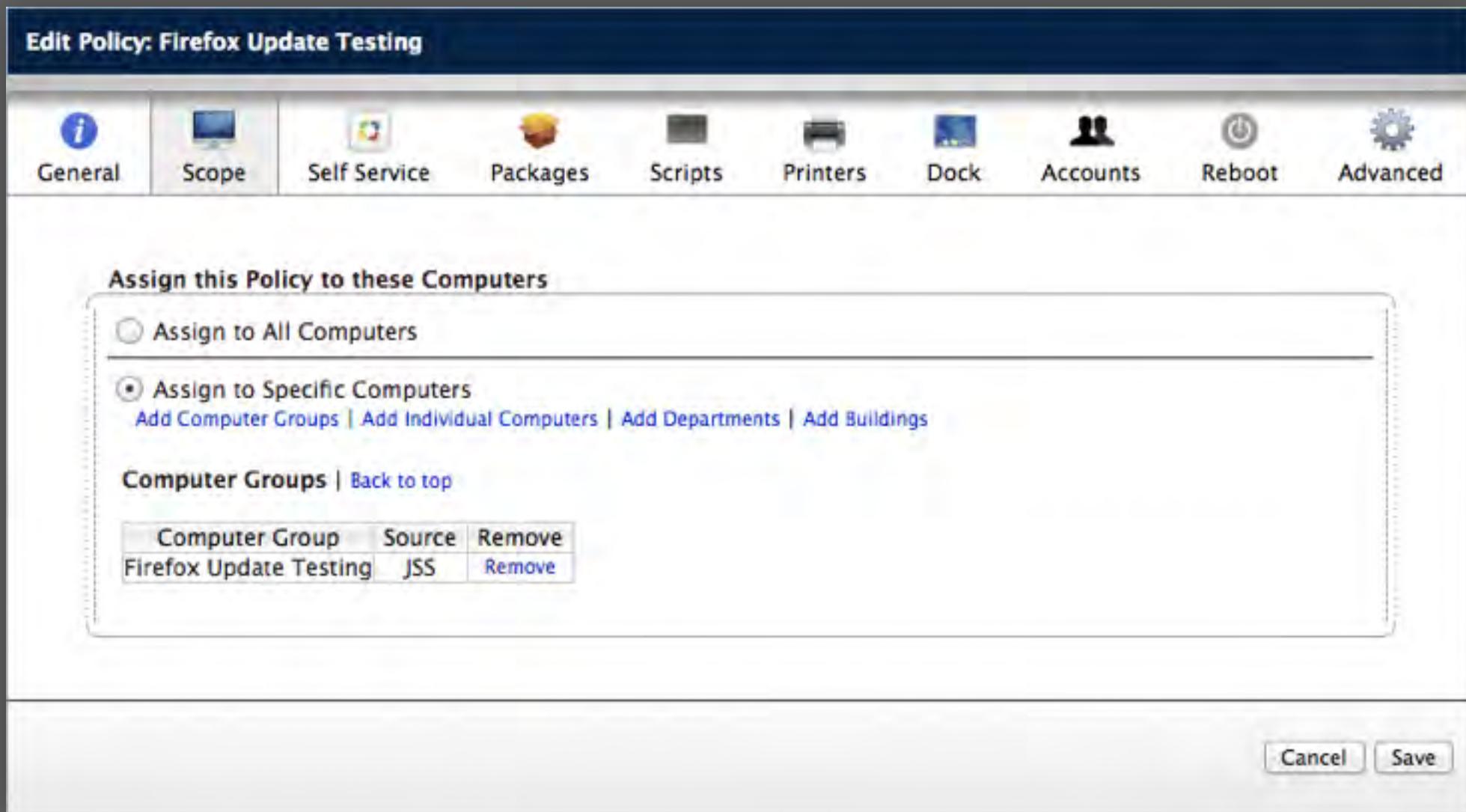
Assign to Specific Computers

[Add Computer Groups](#) | [Add Individual Computers](#) | [Add Departments](#) | [Add Buildings](#)

[Computer Groups](#) | [Back to top](#)

Computer Group	Source	Remove
Firefox Update Testing	JSS	Remove

Cancel Save



For each software title there is a SmartGroup...

Update deployment

Edit Smart Computer Group: Firefox Update Testing

ComputerGroup Name: Firefox Update Testing

Send Email Notification on Change:

	Field	Search Type	Criteria	-	+
Computer Information					
	Software installation & patching	is not	Off	-	+
and	Release	is	Testing	-	+
Location Information					
Software Information					
	Application Title	has	Firefox.app	-	+
and	Application Version	is not	10.0.7	-	+
Purchasing Information					
				Cancel	Save

...searching for all hosts with a previous version
of the application deployed.

Update deployment

Edit Policy: Firefox Update Testing

General Scope Self Service Packages Scripts Printers Dock Accounts Reboot Advanced

Packages

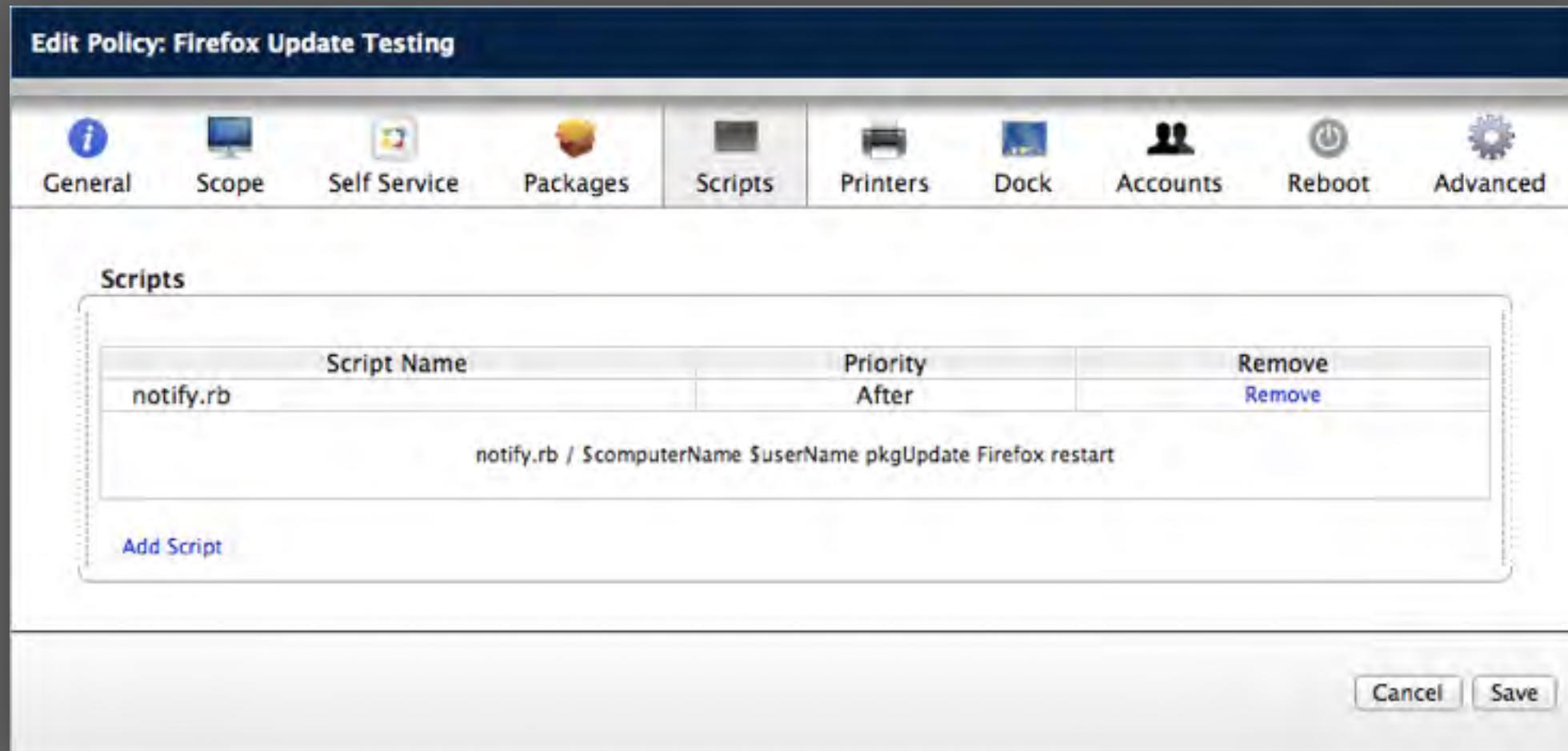
Package Name	Action	FUT	FEU	Autorun	Remove
Firefox_3.6.13.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox-ESR_10.0.7-1.dmg	Install	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox_4.0-1.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox-ESR_10.0.2-1.0.0.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox-ESR_10.0.3-1.0.0.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox_7.0.2-1.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox-ESR_10.0.6-1.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove
Firefox-ESR_10.0.5-1.dmg	Uninstall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove

Add Package

Cancel Save

The policy initially tries to remove any previous version before the new package is deployed.

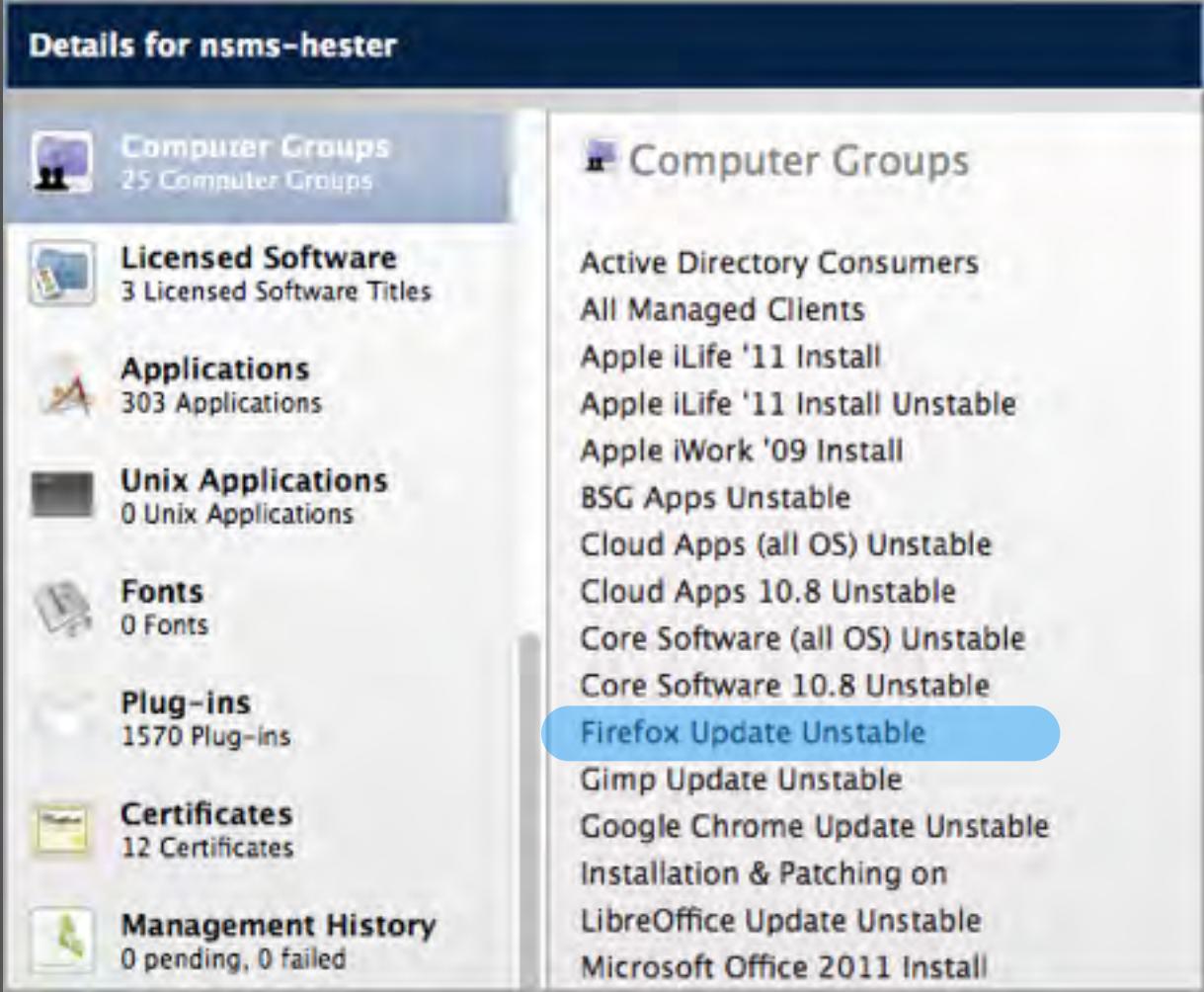
Update deployment



Finally our notification system informs the user to restart the application.

Update deployment

Details for nsms-hester



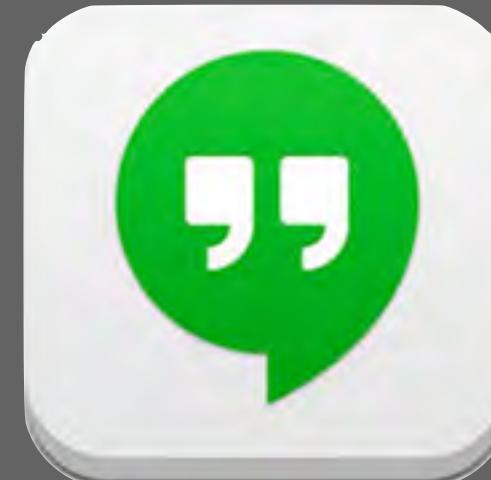
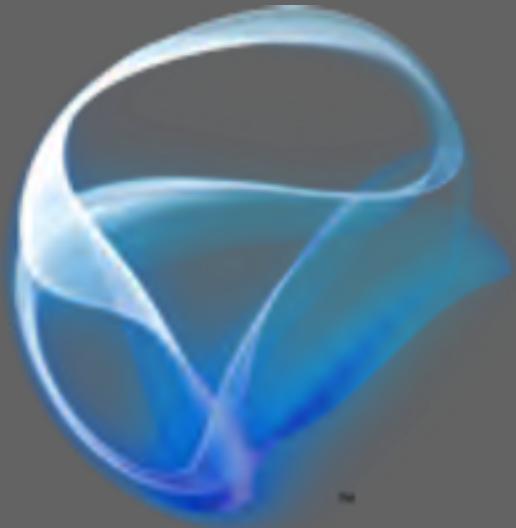
Computer Groups	25 Computer Groups
Licensed Software	3 Licensed Software Titles
Applications	303 Applications
Unix Applications	0 Unix Applications
Fonts	0 Fonts
Plug-ins	1570 Plug-ins
Certificates	12 Certificates
Management History	0 pending, 0 failed

Computer Groups

- Active Directory Consumers
- All Managed Clients
- Apple iLife '11 Install
- Apple iLife '11 Install Unstable
- Apple iWork '09 Install
- BSG Apps Unstable
- Cloud Apps (all OS) Unstable
- Cloud Apps 10.8 Unstable
- Core Software (all OS) Unstable
- Core Software 10.8 Unstable
- Firefox Update Unstable**
- Gimp Update Unstable
- Google Chrome Update Unstable
- Installation & Patching on
- LibreOffice Update Unstable
- Microsoft Office 2011 Install

The computer groups in each host details give a very precise overview of what will be updated during the next update cycle.

Essentials, Plug-ins and Players



JRE 6 and JRE 7

The Java Browser Plug-in Saga



32bit
Java 6

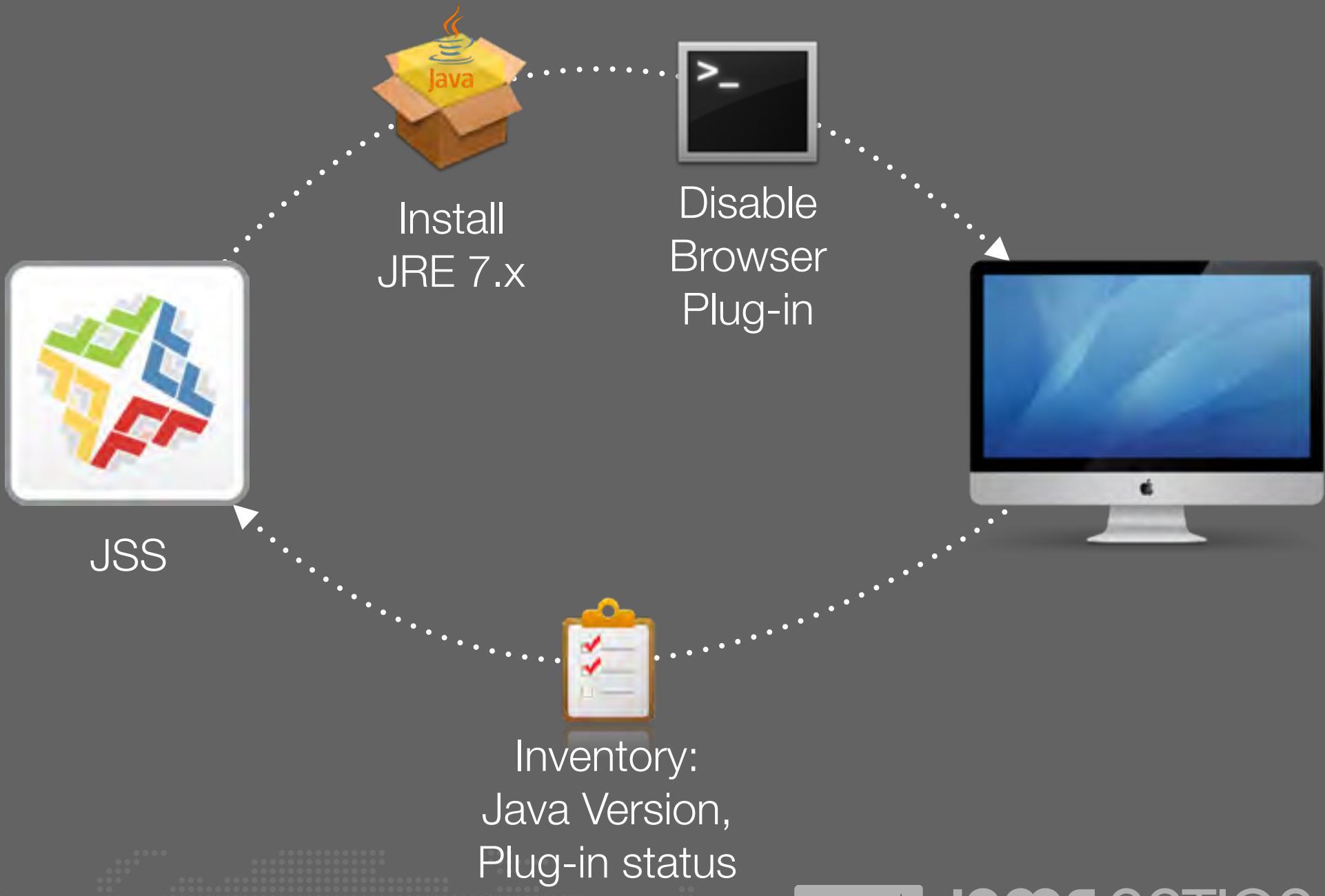


64bit
Java 7



64bit
Java 7

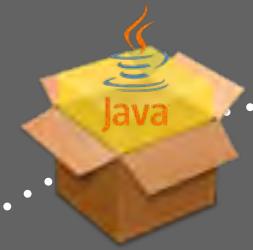
Recipe: Java 7 Browser Plug-in



Recipe: Java 7 Browser Plug-in



JSS



Install
JRE 7.x



Disable
Browser
Plug-in



?



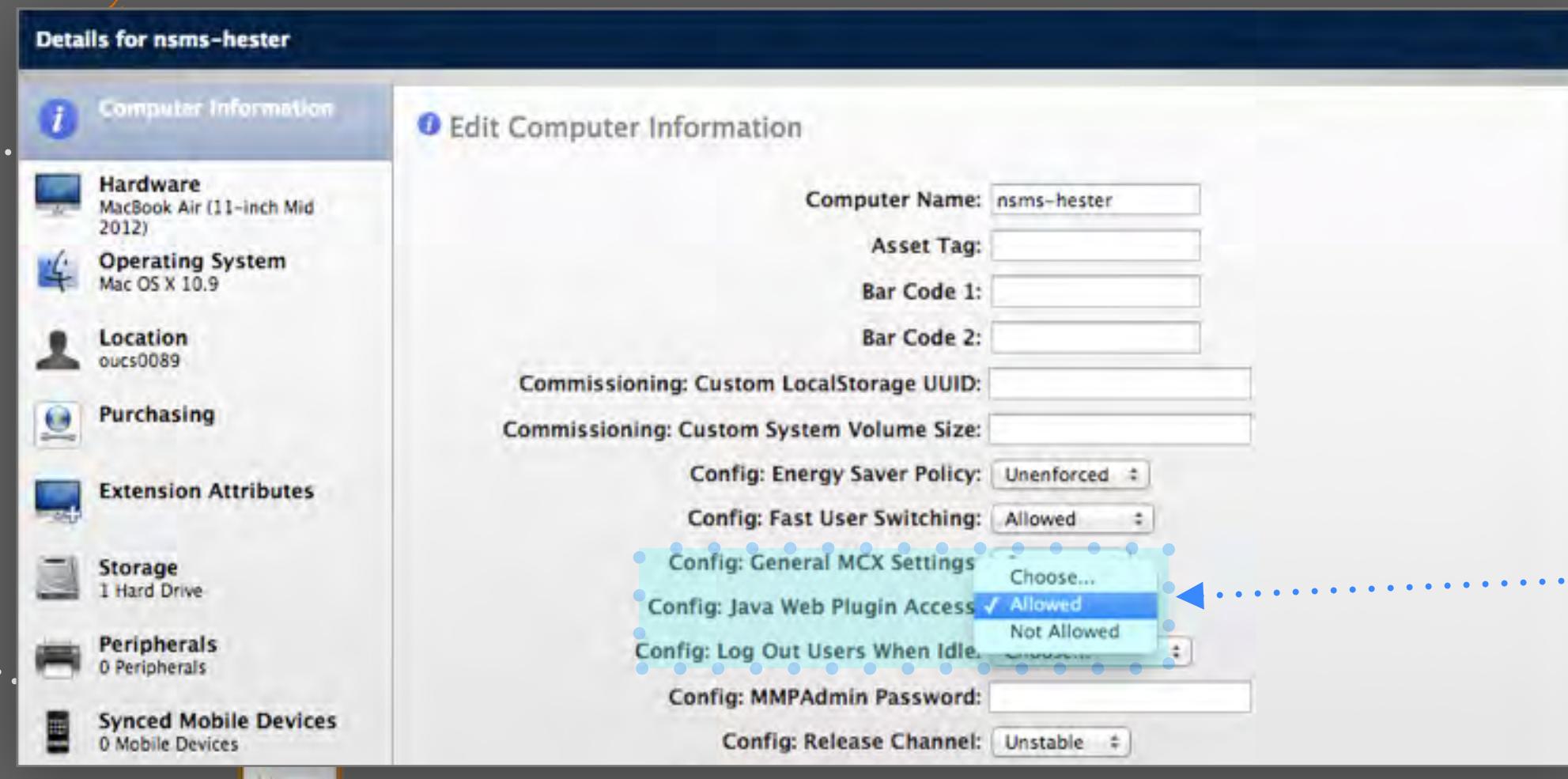
Inventory:
Java Version,
Plug-in status



Recipe: Java 7 Browser Plug-in



JSS



Details for nsms-hester

Computer Information

Hardware: MacBook Air (11-inch Mid 2012)

Operating System: Mac OS X 10.9

Location: oucs0089

Purchasing

Extension Attributes

Storage: 1 Hard Drive

Peripherals: 0 Peripherals

Synced Mobile Devices: 0 Mobile Devices

Edit Computer Information

Computer Name: nsms-hester

Asset Tag:

Bar Code 1:

Bar Code 2:

Commissioning: Custom LocalStorage UUID:

Commissioning: Custom System Volume Size:

Config: Energy Saver Policy: Unenforced

Config: Fast User Switching: Allowed

Config: General MCX Settings

Config: Java Web Plugin Access: **Allowed**

Config: Log Out Users When Idle:

Config: MMPAdmin Password:

Config: Release Channel: Unstable

Inventory:
Java Version,
Plug-in status



Recipe: Java 7 Browser Plug-in



JSS



The screenshot shows the 'Support' section of the Self Service application. The 'Java Web Plugin Master Switch' option is highlighted with a blue background. Other options include 'Mount Departmental Shares', 'Reinstall Blavatnik School of Government Printers', 'Reinstall NSMS Printers', 'Reinstall OUCS Help Centre Printers', 'Run Apple Software Update', 'Spotlight Index', 'System Inventory', and 'Wacom Tablet Drivers Unstable'. A sidebar on the left lists 'Getting Started', 'Help', 'Knowledge Base', and 'Latest Updates'. A sidebar on the right lists categories like 'Featured', 'Communications and Web', 'Design and Media', etc.

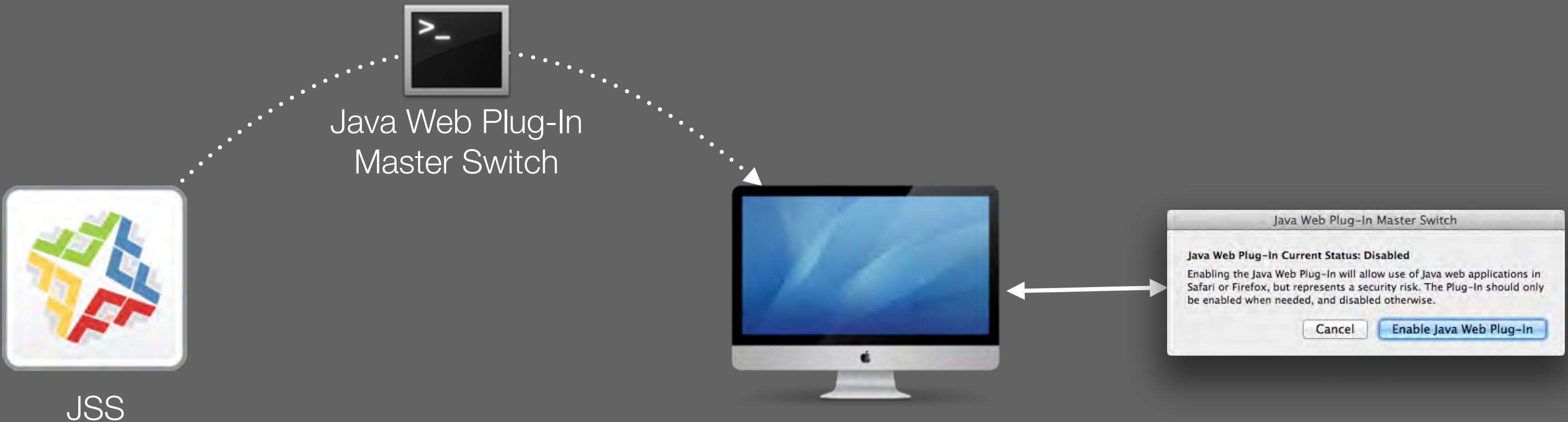
Recipe: Java 7 Browser Plug-in



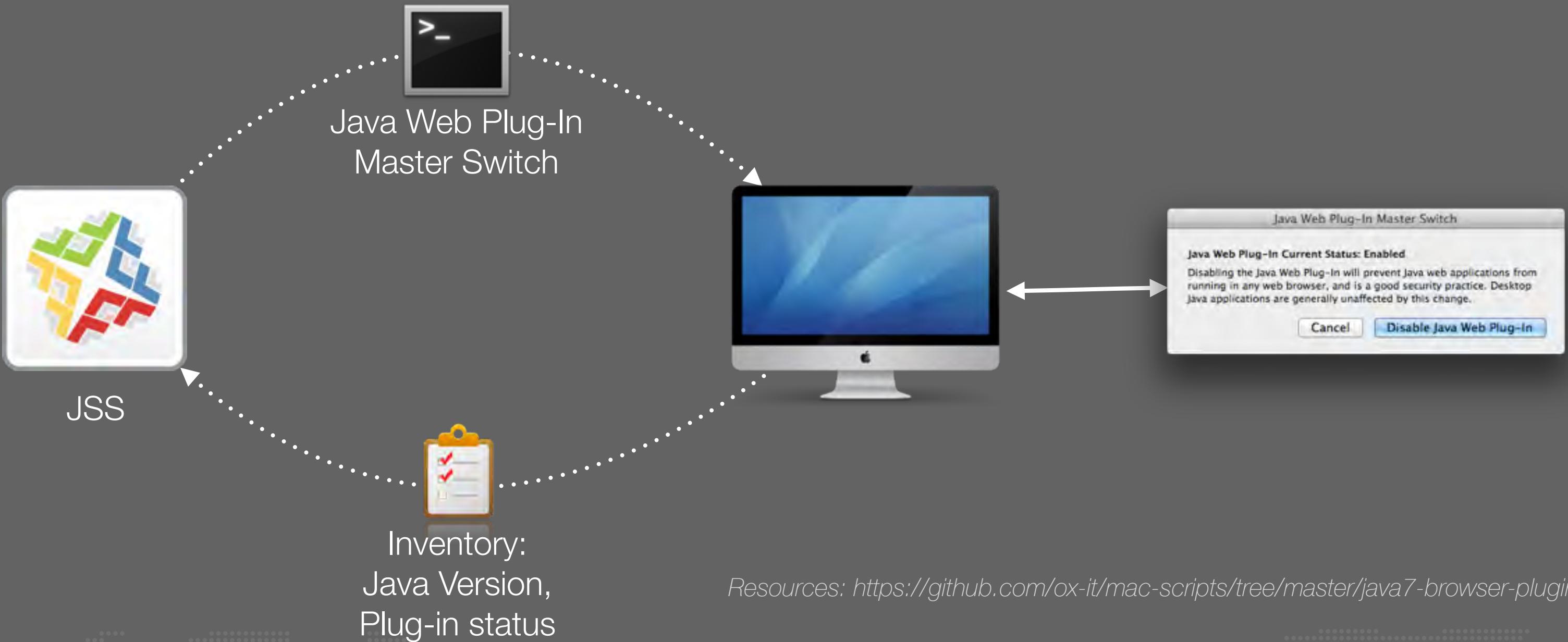
JSS



Recipe: Java 7 Browser Plug-in



Recipe: Java 7 Browser Plug-in



Done



Partitioning



OS X



Updates



Directory
Binding



Config



Branding

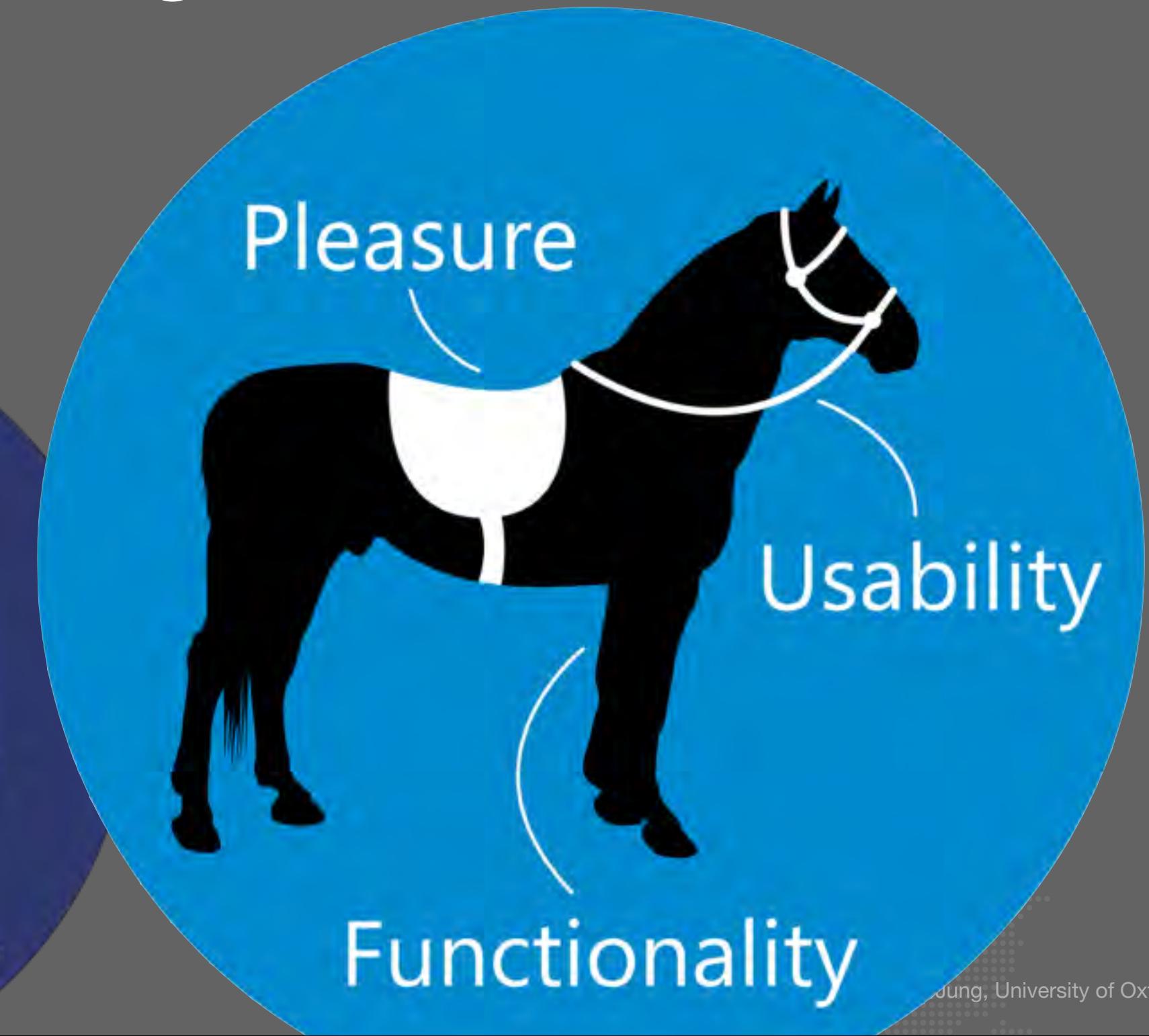
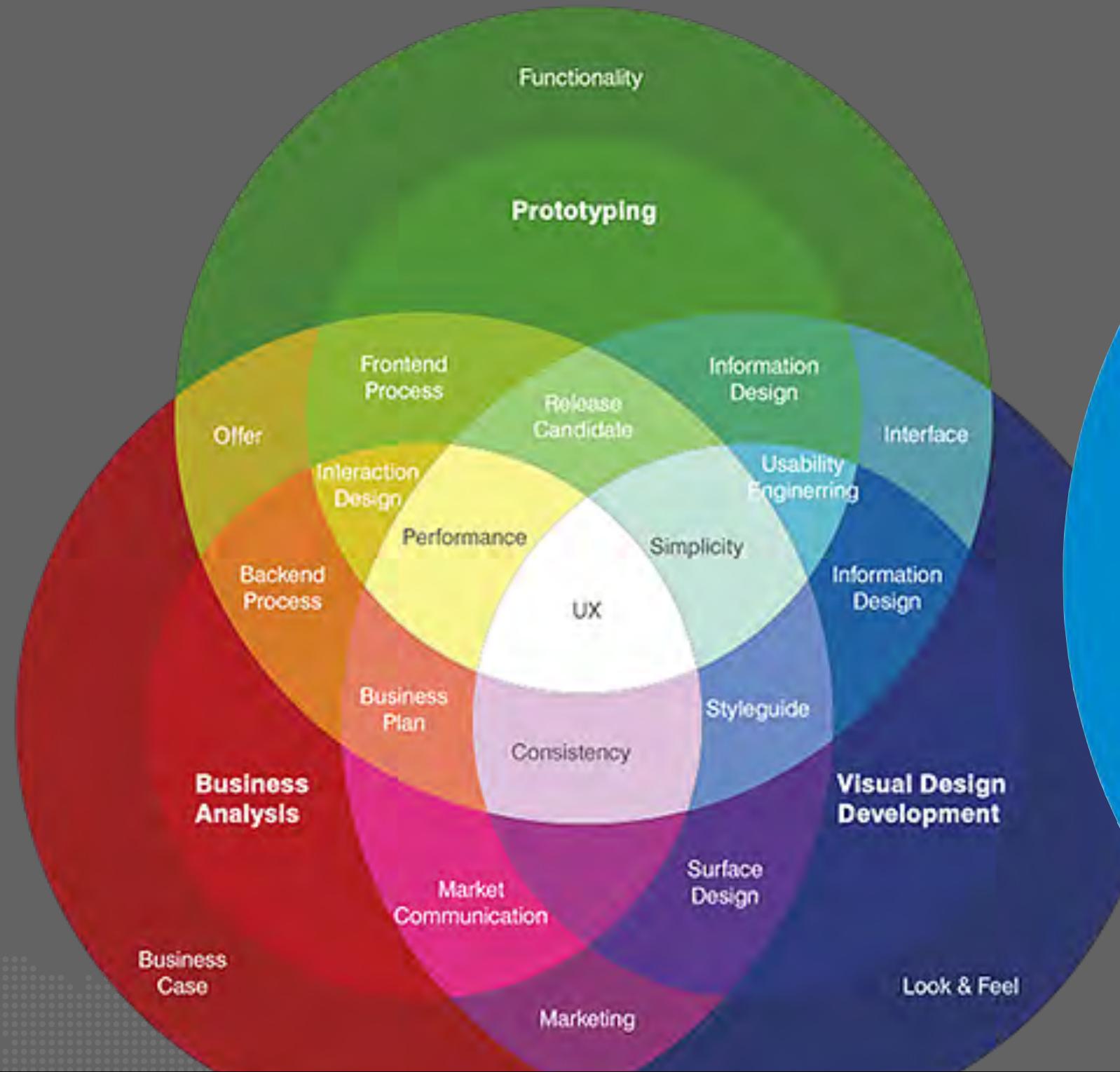


Apps

“Focus on the user
and all else will follow”

Google Company Philosophy

User Experience Management



Out of the Box Experience



JAMF NATION
user conference



A Light Touch

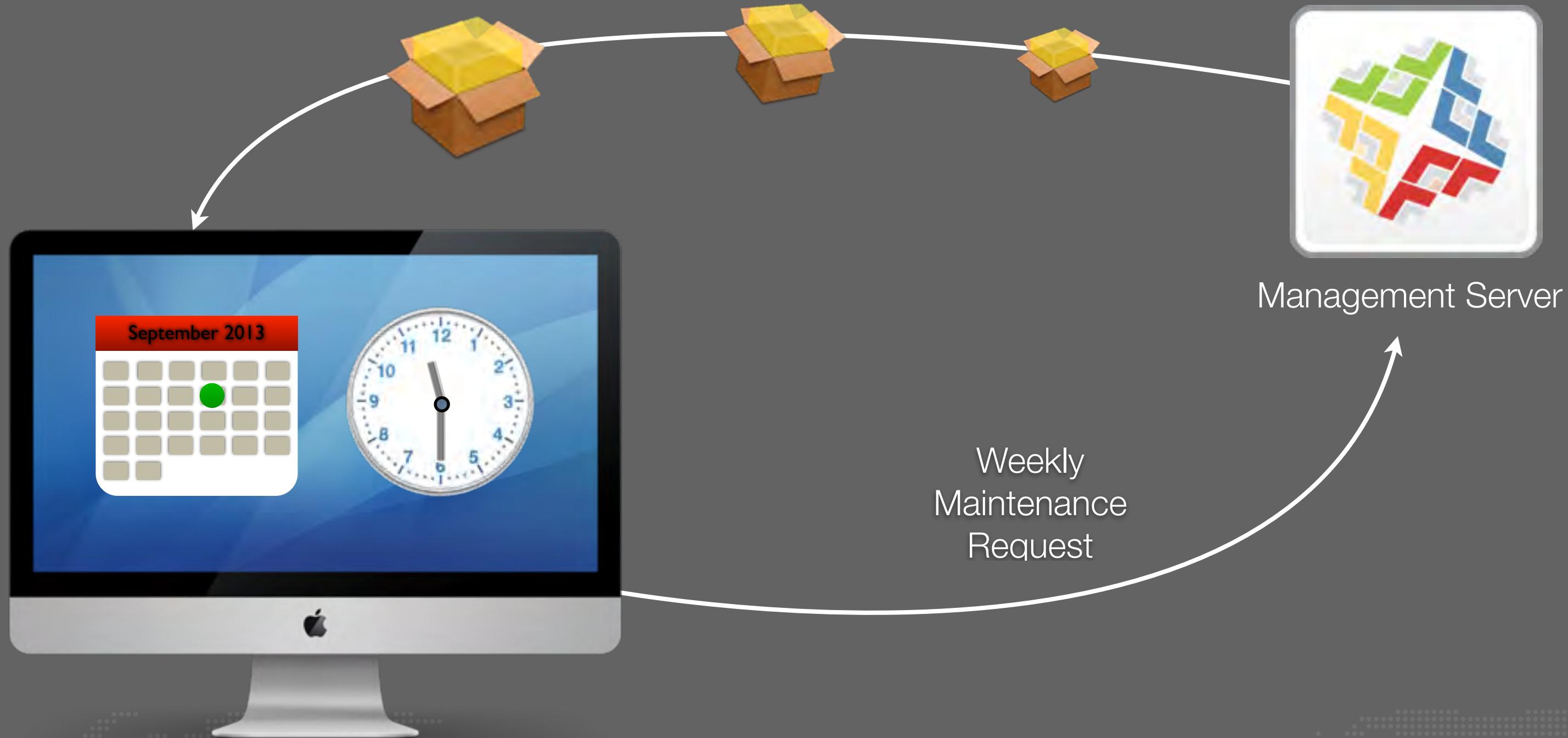




A Light Touch



Weekly Maintenance





In-House App Store

The screenshot shows the 'Self Service' application window. On the left is a sidebar with links: 'Self Service' (nmpjss.nsms.ox.ac.uk), 'Getting Started' (New to the Mac?), 'Help' (Request support from NSMS), 'Knowledge Base' (Frequently asked questions), and 'Latest Updates' (The MMP Software Updates blog). The main area is titled 'Self Service' and features a search bar. Below it is a 'Featured' section displaying various software packages with their icons and 'INSTALL' buttons. To the right is a 'Categories' sidebar listing software types: Featured, Communications and Web, Design and Media, Licensed Software, Office and Productivity, Scientific, Support, System Administration, Updates, and Utilities.

Category	Software	Icon	Action
Featured	AA Apple Final Cut Studio (2009)		INSTALL
	Adium		INSTALL
	Adobe Acrobat XI Pro		INSTALL
	Adobe CS6 Master Collection		INSTALL
	Adobe Photoshop Elements 9		INSTALL
	Alfred		INSTALL
	Apple Server Admin Tools 10.6		INSTALL
	ChemBioDraw Ultra		INSTALL
	Citrix ICA Client		INSTALL
	CmapTools		INSTALL
	CoRD		INSTALL
	doubleTwist		INSTALL
Emacs		INSTALL	
Endnote X4		INSTALL	
Endnote X6		INSTALL	

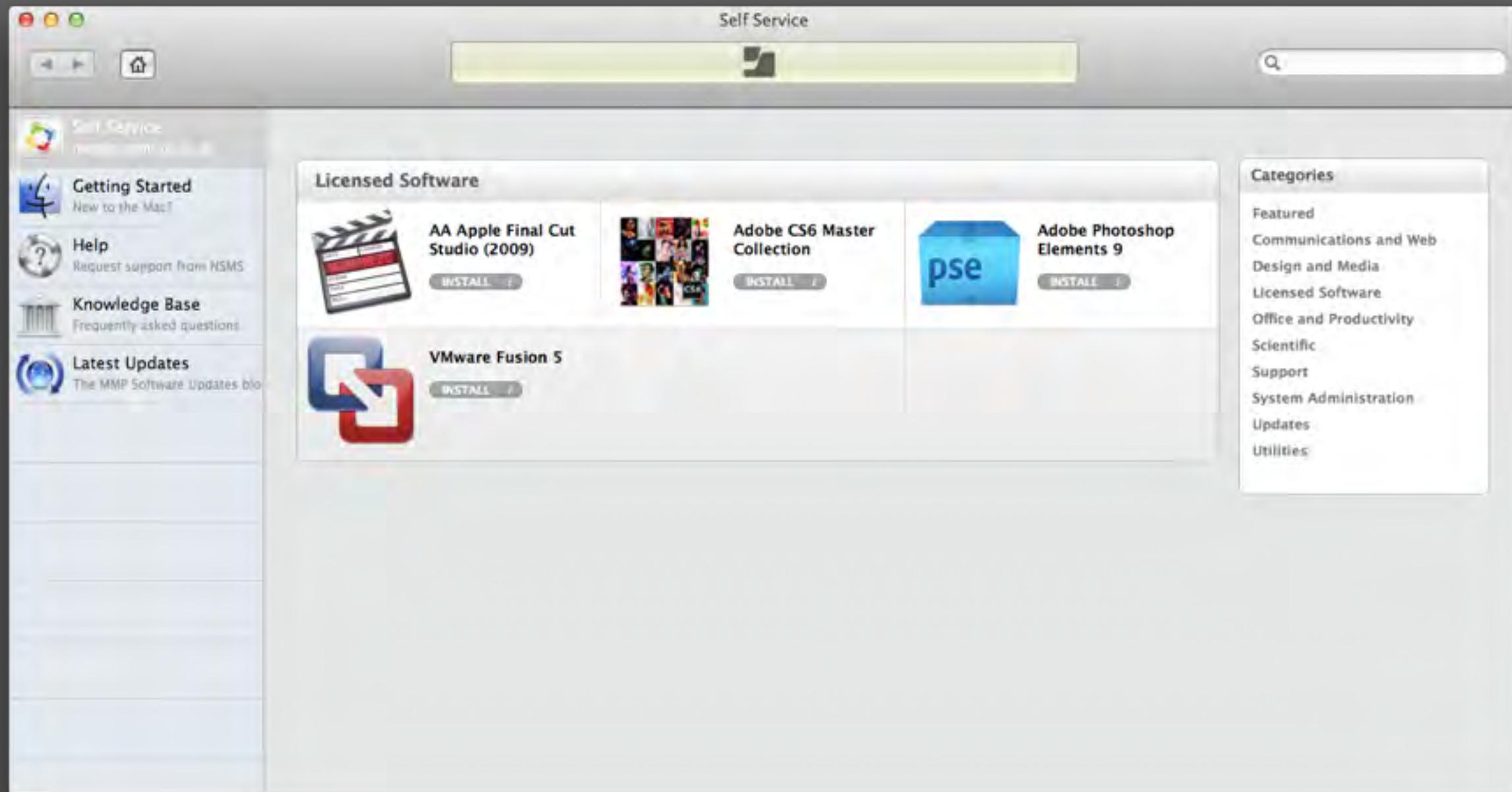


In-House App Store



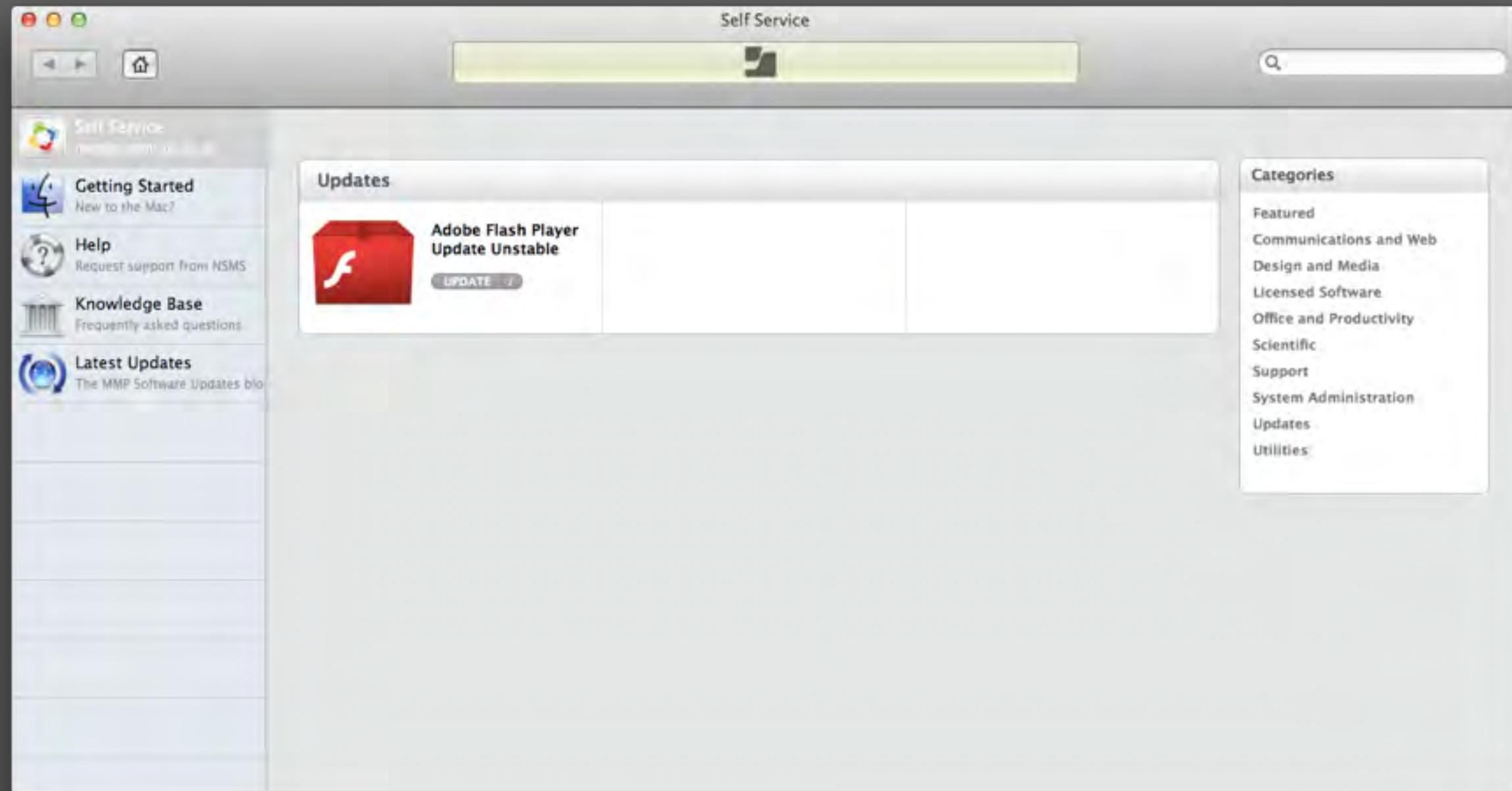


In-House App Store





Even more Self Service



Even more Self Service



User Experience Summary

User Experience Summary



Grazie!

Obrigado!

Danke!

谢谢

Merci!

Thank you!

Gracias!

спасибо!





<https://github.com/ox-it/mac-scripts>

marko.jung@it.ox.ac.uk @mjung